

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A magnetizing device for a superconductor,
comprising:

a bulk superconductor;

a coolant chamber configured to cool the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the superconductor starts, ~~with respect to the superconductor cooled down to or below the critical temperature at which the transition to the superconducting state occurs, in a state where there are provided an opposing pair of coils arranged on fixed sides with respect to the superconductor, the opposing pair of coils being disposed so as to sandwich the superconductor, and the pair of coils are formed as spiral coils that generate~~ the magnetic field generating means including a pair of opposed coils fixed so as to sandwich the superconductor such that the central axis of the superconductor is perpendicular to a surface of each coil, the surface of each coil being flat and each coil spirally winding toward the center thereof, the coils generating a conical-shaped magnetic field distribution therebetween, each facing a surface of the superconductor; and

position modification means capable of modifying the relative positional relationships between the superconductor and the pair of coils.

Claim 2 (Canceled).

Claim 3 (Currently Amended): The magnetizing device ~~for superconductor~~ according to Claim 1, wherein the superconductor is a high temperature superconductor arranged on a rotating plate.

Claim 4 (Canceled).

Claim 5 (Currently Amended): A superconducting synchronous machine comprising:
a bulk superconductor arranged on a disk;

a coolant chamber configured to cool the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the superconductor starts, ~~with respect to the superconductor cooled down to or below the critical temperature at which the transition to the superconducting state occurs, in a state where there are provided an opposing pair of coils arranged on fixed sides with respect to the superconductor, the opposing pair of coils being disposed so as to sandwich the superconductor, and the pair of coils are formed as spiral coils that generate~~ the magnetic field generating means including a pair of opposed coils fixed so as to sandwich the superconductor such that the central axis of the superconductor is perpendicular to a surface of each coil, the surface of each coil being flat and each coil spirally winding toward the center thereof, the coils generating a conical-shaped magnetic field distribution therebetween, each facing a surface of the superconductor;

an alternating current power source for supplying the magnetic field generating means with a current for driving the superconductor; and

a mode changeover switch for performing a changeover between a magnetic field generation mode and an alternating current supply mode.

Claim 6 (Currently Amended): A superconducting synchronous machine comprising:

a bulk superconductor arranged on a disk;

a coolant chamber configured to cool the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the superconductor starts, ~~with respect to the superconductor cooled down to or below the critical temperature at which the transition to the superconducting state occurs, in a state where there are provided an opposing pair of coils arranged on fixed sides with respect to the superconductor, the opposing pair of coils being disposed so as to sandwich the superconductor, and the pair of coils are formed as spiral coils that generate the magnetic~~ field generating means including a pair of opposed coils fixed so as to sandwich the superconductor such that the central axis of the superconductor is perpendicular to a surface of each coil, the surface of each coil being flat and each coil spirally winding toward the center thereof, the coils generating a conical-shaped magnetic field distribution therebetween, each facing a surface of the superconductor;

a prime mover for rotationally driving the disk with the superconductor provided thereon; and

a mode changeover switch for performing a changeover between a magnetic field generation mode and a power generation mode.

Claim 7 (Currently Amended): A superconducting synchronous machine comprising:

a bulk superconductor arranged on a disk;

a coolant chamber configured to cool the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the superconductor starts, ~~with respect to the superconductor cooled down to or below the critical temperature at which the transition to the superconducting state occurs, in a state where there are provided an opposing pair of coils arranged on fixed sides with respect to the superconductor, the opposing pair of coils being disposed so as to sandwich the superconductor, and the pair of coils are formed as spiral coils that generate~~ the magnetic field generating means including a pair of opposed coils fixed so as to sandwich the superconductor such that the central axis of the superconductor is perpendicular to a surface of each coil, the surface of each coil being flat and each coil spirally winding toward the center thereof, the coils generating a conical-shaped magnetic field distribution therebetween, each facing a surface of the superconductor;

an alternating current power source for supplying the magnetic field generating means with a current for driving the superconductor;

a prime mover for rotationally driving the disk with the superconductor provided thereon; and

a mode changeover switch for performing a changeover among a magnetic field generation mode, an alternating current supply mode, and a power generation mode.

Claim 8 (Original): The superconducting synchronous machine according to Claim 5, 6, or 7, further comprising:

a sensor for detecting the strength of a magnetic field of the superconductor to thereby control the magnetization of the superconductor.

Claims 9 and 10 (Canceled).

Claim 11 (Original): The superconducting synchronous machine according to Claim 5, 6, or 7, wherein the number of pairs of armature coils is an integral multiple of three; and wherein the number of the superconductors is an integral multiple of two.

Claim 12 (Original): The superconducting synchronous machine according to Claim 5, 6, or 7, wherein the superconductor is a high temperature superconductor.

Claim 13 (Canceled).